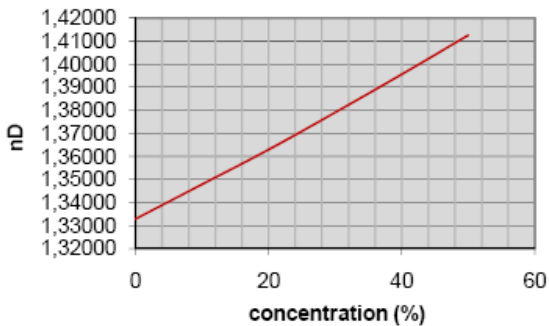


UREA NH_2CONH_2

Typical end products

Fertilizers, non-protein feed supplement for ruminants, manufacturing of urea-formaldehyde resins, plastics, adhesives, coatings, textile agents, ion-exchange resins

Chemical curve: Urea R.I. per Conc% b.w. at Ref. Temp. of 20°C



Introduction

Urea, NH_2CONH_2 , is a colorless crystal, which dissolves in water. It is a weak alkaline, which forms salts in combination with strong acids. Urea is largely used as a fertilizer and as a non-protein feed supplement for ruminants. It is also used in the urea-formaldehyde resins, plastics, adhesives, coatings, textile agents and ion-exchange resins manufacturing.

Application

Urea can be produced by numerous methods but mainly it is commercially made by reacting carbon dioxide with ammonia at 200°C (392°F). After reacting, urea is evaporated and processed by prilling or granulating to produce the end product.


Installation

The K-Patents Process Refractometer PR-23-GP is used for quality control. It monitors the concentration of urea, following the reacting. Typical measurement range is 65-75% and the normal process temperature is about 80°C (176°F).

The K-Patents Process Refractometer PR-23-GP is also used to measure the concentration of dissolved urea in water in medicinal insulin manufacturing.

The K-Patents refractometer is installed in the recirculation pipe. It is used to control the quality of the urea-to-water concentration adjustment. Typical measurement range is 1.380-1.395 R.I. and the normal process temperature is around 4°C (39°F).

CHEMICALS AND ALLIED	
APPLICATION NOTE	4.04.04
UREA PRODUCTION PROCESS	

Instrumentation	Description
 The image shows the K-Patents Process Refractometer PR-23-GP. It consists of a white rectangular electronic display unit with a small screen showing the number '25.33'. Below the screen are several buttons. To the right of the display unit is a stainless steel probe with a red, cylindrical, threaded section at the top, which is used for clamping onto a pipe or tank.	K-Patents Process Refractometer PR-23-GP is an industrial refractometer for large pipe sizes and tanks, cookers, crystallizers and kettles. Installation through a flange or clamp connection.
Measurement range:	Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 % by weight.